

PTO/PCT Rec'd 09 AUG 2002

PATENT #4.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Irina Caminschi, et al.

Serial No.: 10/070,982

Filed: March 8, 2002

For: DENDRITIC CELL MEMBRANE
PROTEIN FIRE

Group Art Unit: Unknown

Examiner: Unknown

Atty. Dkt. No.: FBRC:011US

EXPRESS MAIL MAILING LABEL

NUMBER EL 839265725 US

DATE OF DEPOSIT August 9, 2002

SECOND PRELIMINARY AMENDMENT**BOX PCT**

Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the above-identified patent application as follows:

AMENDMENT**In the specification:**

Please insert as the first paragraph of the specification the following paragraph:

This is a U.S. National Application under 35 U.S.C. § 371 of International Application
No. PCT/AU00/01083 filed on September 11, 2000, which claims the benefit of priority to AU
PQ 2728 filed on September 9, 1999.

In the claims:

Please amend claim 1 as follows:

10/16/2002 SANDED1 00000006 10070982

01 FC:1615

486.00 OP

1. An isolated polypeptide comprising the amino acid sequence of SEQ ID NO:1 or a functional fragment thereof or an amino acid sequence having at least 50% identity to the amino acid sequence of SEQ ID NO:1 or a functional fragment thereof.

Please add the following new claims:

27. (New) The isolated polypeptide of claim 1, wherein the amino acid sequence has at least 50% identity to the amino acid sequence of SEQ ID NO: 1.
28. (New) The isolated polypeptide of claim 27, wherein the amino acid sequence has at least 70% identity to the amino acid sequence of SEQ ID NO: 1.
29. (New) The isolated polypeptide of claim 27, wherein the amino acid sequence has at least 80% identity to the amino acid sequence of SEQ ID NO: 1.
30. (New) The isolated polypeptide of claim 27, wherein the amino acid sequence has at least 90% identity to the amino acid sequence of SEQ ID NO: 1.
31. (New) An isolated polypeptide comprising the amino acid sequence of SEQ ID NO:2 or a functional fragment thereof or an amino acid sequence having at least 50% identity to the amino acid sequence of SEQ ID NO:2 or a functional fragment thereof.
32. (New) The isolated polypeptide of claim 31, wherein the amino acid sequence has at least 50% identity to the amino acid sequence of SEQ ID NO: 2.
33. (New) The isolated polypeptide of claim 32, wherein the amino acid sequence has at least 70% identity to the amino acid sequence of SEQ ID NO: 2.
34. (New) The isolated polypeptide of claim 32, wherein the amino acid sequence has at least 80% identity to the amino acid sequence of SEQ ID NO: 2.
35. (New) The isolated polypeptide of claim 32, wherein the amino acid sequence has at least 90% identity to the amino acid sequence of SEQ ID NO: 2.

36. (New) An isolated ligand, wherein the ligand interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2.
37. (New) The isolated ligand of claim 36, wherein the functional fragment has at least 50% identity to the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
38. (New) The isolated ligand of claim 36, wherein the functional fragment has at least 70% identity to the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
39. (New) The isolated ligand of claim 36, wherein the functional fragment has at least 80% identity to the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
40. (New) The isolated ligand of claim 36, wherein the functional fragment has at least 90% identity to the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
41. (New) The isolated ligand of claim 36, wherein the functional fragment has the amino acid sequence of SEQ ID NO: 1 or SEQ ID NO: 2.
42. (New) The isolated ligand of claim 36, wherein the ligand is an antibody.
43. (New) The isolated ligand of claim 42, wherein the ligand is the binding portion of the antibody.
44. (New) An isolated nucleic acid molecule comprising the sequence of SEQ ID NO:3, a sequence having at least 60% identity to the sequence of SEQ ID NO:3, a sequence which hybridizes to the sequence of SEQ ID NO:3 under stringent conditions, or a sequence encoding a functional analogue of a polypeptide of SEQ ID NO:1.
45. (New) The isolated nucleic acid molecule of claim 44, wherein the nucleic acid molecule comprises a sequence of at least 60% identity with the sequence of SEQ ID NO:3.
46. (New) The isolated nucleic acid molecule of claim 45, wherein the nucleic acid molecule comprises a sequence of at least 70% identity with the sequence of SEQ ID NO:3.
47. (New) The isolated nucleic acid molecule of claim 45, wherein the nucleic acid molecule comprises a sequence of at least 80% identity with the sequence of SEQ ID NO:3.

48. (New) The isolated nucleic acid molecule of claim 45, wherein the nucleic acid molecule comprises a sequence of at least 90% identity with the sequence of SEQ ID NO:3.
49. (New) An isolated nucleic acid molecule comprising the sequence of SEQ ID NO:4, a sequence having at least 60% identity to the sequence of SEQ ID NO:4, a sequence which hybridizes to the sequence of SEQ ID NO:4 under stringent conditions, or a sequence encoding a functional analogue of a polypeptide of SEQ ID NO:2.
50. (New) The isolated nucleic acid molecule of claim 49, wherein the nucleic acid molecule comprises a sequence of at least 60% identity with the sequence of SEQ ID NO:4.
51. (New) The isolated nucleic acid molecule of claim 50, wherein the nucleic acid molecule comprises a sequence of at least 70% identity with the sequence of SEQ ID NO:4.
52. (New) The isolated nucleic acid molecule of claim 50, wherein the nucleic acid molecule comprises a sequence of at least 80% identity with the sequence of SEQ ID NO:4.
53. (New) The isolated nucleic acid molecule of claim 50, wherein the nucleic acid molecule comprises a sequence of at least 90% identity with the sequence of SEQ ID NO:4.
54. (New) An isolated nucleic acid molecule encoding the binding region of a ligand, wherein the ligand interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2.
55. (New) The isolated nucleic acid molecule of claim 54, wherein the ligand is an antibody.
56. (New) A composition for use in raising or lowering an immune response in a subject comprising a ligand that interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2 and an antigen.
57. (New) The composition of claim 56, further comprising a carrier.
58. (New) The composition of claim 56, further comprising an adjuvant.
59. (New) The composition of claim 56, further comprising an adjuvant and a carrier.
60. (New) The composition of claim 56, wherein the antigen is associated with the ligand.

61. (New) The composition of claim 56, wherein the antigen is conjugated to the ligand.
62. (New) A composition for use in raising or lowering an immune response in a subject comprising a nucleic acid molecule and a carrier, wherein the nucleic acid molecule comprises a first sequence encoding a ligand that interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2 and a second sequence encoding an antigen.
63. (New) A method of screening a putative compound for immunological regulatory activity comprising:
 - (a) reacting the compound with a polypeptide comprising the amino acid sequence of SEQ ID NO:1 or a functional fragment thereof or an amino acid sequence having at least 50% identity to the amino acid sequence of SEQ ID NO:1 or a functional fragment thereof; and
 - (b) measuring the interaction between the compound and the polypeptide.
64. (New) A method of isolating an antigen presenting cell from a biological sample comprising contacting the biological sample with a ligand, wherein the ligand interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2, to form a complex between the ligand and the antigen presenting cell and isolating the complex formed between the ligand and the antigen presenting cell from the biological sample.
65. (New) The method of claim 64, wherein the ligand is immobilized on a solid support.
66. (New) A method of immunizing a subject comprising:
 - (a) isolating antigen presenting cells from a fluid sample obtained from the subject, wherein the isolation involves contacting the fluid sample with a ligand that interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2;
 - (b) exposing the cells isolated from step (a) to an antigen; and
 - (c) reintroducing the cells from step (b) into the subject.

67. (New) The method of claim 66, further comprising the step of growing the antigen presenting cells *in vitro* after step (a).
68. A method of immunizing a subject comprising:
 - (a) obtaining a fluid sample from the subject;
 - (b) isolating precursor cells from the fluid sample by contacting the fluid sample with a ligand that interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2;
 - (c) growing the cells isolated from step (a) *in vitro* such that they mature and differentiate to become antigen presenting cells;
 - (d) exposing the cells obtained in step (c) to an antigen; and
 - (e) reintroducing the cells from step (d) into the subject.
69. (New) A method of modulating an immune response in a subject comprising administering to the subject a ligand that interacts with a functional fragment of SEQ ID NO: 1 or SEQ ID NO: 2 such that the ligand binds to and inhibits the function of an antigen presenting cell.
70. (New) The method of claim 69, wherein the antigen presenting cell is a myeloid dendritic cell.
71. (New) The method of claim 69, further comprising the step of administering an antigen to the subject.
72. (New) The method of claim 71, wherein the antigen is administered after administration of the ligand.

REMARKS

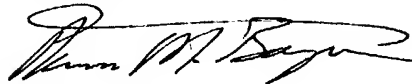
I. State of the claims

Claims 1-26 were present in the PCT application and were filed with the application on March 8, 2002. Claims 2-26 were cancelled without prejudice or disclaimer in a First Preliminary Amendment filed concurrently with the application. Applicants expressly reserved the right to pursue claims to the subject matter of claims 2-26. Applicants add by the present amendment claims 27-72. Therefore, claims 1 and 27-72 are currently pending. No new matter is introduced by these amendments.

II. Conclusion

Examination of the amended claims is respectfully requested.

Respectfully submitted,



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Date: August 9, 2002

10/070982
JC13 Rec'd PCT/PTO 08 MAR 2002

Express Mail Cert. No. EL794535315US
Date: March 8, 2002

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
DO/EO/US RECEIVING OFFICE**

Applicants for DO/EO/US:

Irina CAMINSCHI, Stephane Alain
VANDENABEELE, Mark Dexter WRIGHT,
Kenneth Douglas SHORTMAN

Atty. Dkt. No.: FBRC:011/TMB

International Application No.: PCT/AU00/01083

International Filing Date: 11 September 2000

Title: DENDRITIC CELL MEMBRANE PROTEIN
FIRE

PRELIMINARY AMENDMENT

BOX PCT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Please amend the above-identified patent application as follows:

AMENDMENT

In the claims:

Please cancel without prejudice or disclaimer claims 2-26.

REMARKS

I. State of the claims

Claims 1-26 were present in the PCT application and were filed herewith. Claims 2-26 have been cancelled without prejudice or disclaimer. Applicants expressly reserve the right to pursue claims to the subject matter of claims 2-26.

II. Conclusion

The claims have been amended to eliminate multiple dependencies. Examination of the amended claim is respectfully requested.

No fees are believed to be due in connection with the filing of this Preliminary Amendment; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be deemed necessary for any reason relating to the enclosed materials, the Commissioner is hereby authorized to deduct said fees from Fulbright & Jaworski Deposit Account No. 50-1212/10011874/TMB.

Respectfully submitted,



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Date: March 8, 2002

SEQUENCE LISTING

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<213> Homo sapiens

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 Ser Tyr Phe Cys Thr Cys His Pro Gly Phe Ala Pro Ser Ser Gly Gln
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 Arg Gln Asp Pro Ser Thr Cys Gly Pro Asn Ser Ile Cys Thr Asn Ala
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 Lys Cys Lys Glu Asp Val Ile Pro Asp Asn Lys Gln Ile Gln Gln Cys
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 Ser Thr Ile Glu Glu Ser Glu Ser Thr Glu Thr Thr Gly Val Ala Phe
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Ser Arg Val Val Gly Gly Ile Met Thr Gly Glu Lys Lys Asp Gly Phe
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Ser Asp Pro Ile Ile Tyr Thr Leu Glu Asn Val Gln Pro Lys Gln Lys
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Thr Ile Cys Ser Cys Asn Gln Met Ala Asn Leu Ala Val Ile Met Ala
580 585 590

Ser Gly Glu Leu Thr Met Asp Phe Ser Leu Tyr Ile Ile Ser His Val
595 600 605

Gly Ile Ile Ile Ser Leu Val Cys Leu Val Leu Ala Ile Ala Thr Phe
610 615 620

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625 630 635 640

Leu Cys Val Cys Leu Leu Leu Ala Lys Thr Leu Phe Leu Ala Gly Ile
645 650 655

His Lys Thr Asp Asn Lys Thr Gly Cys Ala Ile Ile Ala Gly Phe Leu
660 665 670

His Tyr Leu Phe Leu Ala Cys Phe Phe Trp Met Leu Val Glu Ala Val
675 680 685

Ile Leu Phe Leu Met Val Arg Asn Leu Lys Val Val Asn Tyr Phe Ser
690 695 700

Ser Arg Asn Ile Lys Met Leu His Ile Cys Ala Phe Gly Tyr Gly Leu
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Pro Met Leu Val Val Val Ile Ser Ala Ser Val Gln Pro Gln Gly Tyr
725 730 735

Gly Met His Asn Arg Cys Trp Leu Asn Thr Glu Thr Gly Phe Ile Trp
740 745 750

Ser Phe Leu Gly Pro Val Cys Thr Val Ile Val Ile Asn Ser Leu Leu
755 760 765

Leu Thr Trp Thr Leu Trp Ile Leu Arg Gln Arg Leu Ser Ser Val Asn
770 775 780

Ala Glu Val Ser Thr Leu Lys Asp Thr Arg Leu Leu Thr Phe Lys Ala
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Val Asn Glu Cys Gln Asp Thr Thr Thr Cys Pro Ala Tyr Ala Thr Cys
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Thr Asp Thr Thr Asp Ser Tyr Tyr Cys Thr Cys Lys Arg Gly Phe Leu
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Ser Ser Asn Gly Gln Thr Asn Phe Gln Gly Pro Gly Val Glu Cys Gln
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Asp Val Asn Glu Cys Leu Gln Ser Asp Ser Pro Cys Gly Pro Asn Ser
85 90 95

Val Cys Thr Asn Ile Leu Gly Arg Ala Lys Cys Ser Cys Leu Arg Gly
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Phe Ser Ser Ser Thr Gly Lys Asp Trp Ile Leu Gly Ser Leu Asp Asn
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Phe Leu Cys Ala Asp Val Asp Glu Cys Leu Thr Ile Gly Ile Cys Pro
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Lys Tyr Ser Asn Cys Ser Asn Ser Val Gly Ser Tyr Ser Cys Thr Cys
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Gln Pro Gly Phe Val Leu Asn Gly Ser Ile Cys Glu Asp Glu Asp Glu

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Gly Gly Pro Met Phe Gln Gly Leu Asp Glu Ser Cys Glu Asp Val Asp		
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Glu Cys Ser Arg Asn Ser Thr Leu Cys Gly Pro Thr Phe Ile Cys Ile		
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Asn Thr Leu Gly Ser Tyr Ser Cys Ser Cys Pro Ala Gly Phe Ser Leu		
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Pro Thr Phe Gln Ile Leu Gly His Pro Ala Asp Gly Asn Cys Thr Asp		
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Thr Ile Gly Ser Tyr Phe Cys Thr Cys His Pro Gly Phe Ala Ser Ser		
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Cys Thr Leu Val Asn Ala Thr Phe Thr Ile Leu Asp Asn Thr Cys Glu		
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Asn Lys Ser Ala Pro Val Ser Leu Gln Ser Ala Ala Thr Ser Val Ser		
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Thr Ser Thr Leu Gly Thr Ile Leu Leu Glu Thr Val Glu Ser Thr Met		
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Gly	Cys	Phe	Ile	Ile	Lys	Glu	Ser	Val	Ser	Thr	Gly	Ala	Pro	Gly	Val	515	520	525	
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Val	Gly	Gly	Thr	Val	Thr	Gly	Glu	Lys	Lys	Glu	Asp	Phe	Ser	Lys	Pro	565	570	575	
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Pro	Ile	Cys	Val	Ser	Trp	Asn	Thr	Asp	Val	Glu	Asp	Gly	Arg	Trp	Thr	595	600	605	
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Ser	Cys	Asn	Arg	Met	Ala	Asn	Leu	Ala	Ile	Ile	Met	Ala	Ser	Gly	Glu	625	630	635	640
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Asp	Asn	Gln	Thr	Ala	Cys	Ala	Ile	Ile	Ala	Gly	Phe	Leu	His	Tyr	Leu	705	710	715	720
Phe	Leu	Ala	Cys	Phe	Phe	Trp	Met	Leu	Val	Glu	Ala	Val	Met	Leu	Phe	725	730	735	
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Val Val Ile Ile Ser Ala Ser Val Gln Pro Arg Gly Tyr Gly Met His
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Asn Arg Cys Trp Leu Asn Thr Glu Thr Gly Phe Ile Trp Ser Phe Leu
785 790 795 800

Gly Pro Val Cys Met Ile Ile Thr Ile Asn Ser Val Leu Leu Ala Trp
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Thr Leu Trp Val Leu Arg Gln Lys Leu Cys Ser Val Ser Ser Glu Val
820 825 830

Ser Lys Leu Lys Asp Thr Arg Leu Leu Thr Phe Lys Ala Ile Ala Gln
835 840 845

Ile Phe Ile Leu Gly Cys Ser Trp Val Leu Gly Ile Phe Gln Ile Gly
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Pro Leu Ala Ser Ile Met Ala Tyr Leu Phe Thr Ile Ile Asn Ser Leu
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Gln Gly Ala Phe Ile Phe Leu Ile His Cys Leu Leu Asn Arg Gln Val
885 890 895

Arg Asp Glu Tyr Lys Lys Leu Leu Thr Arg Lys Thr Asp Leu Ser Ser
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Lys Met Gly
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35 40 45

Ser Ser Phe Ser Glu Ile Ile Thr Thr Pro Thr Glu Thr Cys Asp Asp
50 55 60

Albuquerque, New Mexico

355	360	365
Phe Ala Phe Ser His Leu Glu Ser Ser Asp Gly Glu Ala Gly Arg Asp		
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Pro Pro Ala Lys Asp Val Met Pro Gly Pro Arg Gln Glu Leu Leu Cys		
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Leu Leu His Cys Leu Leu Asn Lys Lys Val Arg Glu Glu Tyr Arg Lys
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Trp Ala Cys Leu Val Ala Gly Gly Ser Lys Tyr Ser Glu Phe Thr Ser
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<400> 23
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SEQUENCE LISTING

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<130> FBRC:011US

<140> 10/070,982

<141> 2002-03-08

<150> PCT/AU00/01083

<151> 2000-09-11

<160> 25

<170> PatentIn Ver. 2.1

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<213> Mus musculus

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Cys	Asn	Glu	Asn	Ala	Ser	Cys	Phe	Asn	Ser	Thr	His	Cys	Val	Cys	Lys
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Lys	Asp	Val	Ser	Tyr	Cys	Arg	Asn	Lys	Ile	Gly	Thr	Tyr	Ile	Cys	Ser
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Cys	Val	Val	Lys	Tyr	Pro	Leu	Phe	Asn	Trp	Val	Ala	Gly	Ile	Ile	Asn
			100					105					110		

Ile	Asp	His	Pro	Asp	Cys	Tyr	Val	Asn	Lys	Ser	Lys	Asn	Thr	Gly	Ser
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Val	Ala	Lys	Gly	Ala	Thr	Lys	Leu	Leu	Arg	Lys	Val	Glu	His	His	Ile
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Leu	Asn	Glu	Asn	Ser	Asp	Ile	Pro	Lys	Lys	Asp	Glu	Asn	Pro	Leu	Leu
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Ala	Gly	Ile	Ile	Asp	Tyr	Asp	His	Pro	Asp	Cys	Tyr	Glu	Asn	Asn	Ser	85	90	95	
Gln	Gly	Thr	Thr	Gln	Ser	Asn	Val	Asp	Ile	Trp	Glu	Asn	Leu	Arg	Arg	100	105	110	
Asn	Gly	Ser	Arg	Glu	Asp	Phe	Ala	Arg	Arg	Ala	Thr	Gln	Leu	Ile	Gln	115	120	125	
Ser	Val	Glu	Leu	Ser	Ile	Trp	Asn	Ala	Ser	Phe	Ala	Ser	Pro	Gly	Lys	130	135	140	
Gly	Gln	Ile	Ser	Glu	Phe	Asp	Ile	Val	Tyr	Glu	Thr	Lys	Arg	Cys	Asn	145	150	155	160
Glu	Thr	Arg	Glu	Asn	Ala	Phe	Leu	Glu	Ala	Gly	Asn	Asn	Thr	Met	Asp	165	170	175	
Ile	Asn	Cys	Ala	Asp	Ala	Leu	Lys	Gly	Asn	Leu	Arg	Glu	Ser	Thr	Ala	180	185	190	
Val	Ala	Leu	Ile	Thr	Tyr	Gln	Ser	Leu	Gly	Asp	Ile	Leu	Asn	Ala	Ser	195	200	205	
Phe	Phe	Ser	Lys	Arg	Lys	Gly	Met	Gln	Glu	Val	Lys	Leu	Asn	Ser	Tyr	210	215	220	
Val	Val	Ser	Gly	Thr	Val	Gly	Leu	Lys	Glu	Lys	Ile	Ser	Leu	Ser	Glu	225	230	235	240
Pro	Val	Phe	Leu	Thr	Phe	Arg	His	Asn	Gln	Pro	Gly	Asp	Lys	Arg	Thr	245	250	255	
Lys	His	Ile	Cys	Val	Tyr	Trp	Glu	Gly	Ser	Glu	Gly	Gly	Arg	Trp	Ser	260	265	270	
Thr	Glu	Gly	Cys	Ser	His	Val	His	Ser	Asn	Gly	Ser	Tyr	Thr	Lys	Cys	275	280	285	
Lys	Cys	Phe	His	Leu	Ser	Ser	Phe	Ala	Val	Leu	Val	Ala	Leu	Ala	Pro	290	295	300	
Lys	Glu	Asp	Pro	Val	Leu	Thr	Val	Ile	Thr	Gln	Val	Gly	Leu	Thr	Ile	305	310	315	320
Ser	Leu	Leu	Cys	Leu	Phe	Leu	Ala	Ile	Leu	Thr	Phe	Leu	Leu	Cys	Arg	325	330	335	
Pro	Ile	Gln	Asn	Thr	Ser	Thr	Ser	Leu	His	Leu	Glu	Leu	Ser	Leu	Cys	340	345	350	
Leu	Phe	Leu	Ala	His	Leu	Leu	Phe	Leu	Thr	Gly	Ile	Asn	Arg	Thr	Glu	355	360	365	

[illegible]

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Lys Lys Arg Phe Met Tyr Pro Val Gly Tyr Gly Ile Pro Ala Val Ile
420 425 430

His Cys Trp Leu Lys Leu Asp Lys Gly Phe Ile Trp Ser Phe Met Gly
450 455 460

Leu Trp Ile Leu Arg Ser Lys Leu Ser Ser Leu Asn Lys Glu Val Ser
485 490 495

Phe Ile Leu Gly Cys Ser Trp Gly Leu Gly Phe Phe Met Val Glu Glu
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Val Gly Lys Thr Ile Gly Ser Ile Ile Ala Tyr Ser Phe Thr Ile Ile
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Asn Thr Leu Gln Gly Val Leu Leu Phe Val Val His Cys Leu Leu Asn
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Arg Gln Val Arg Met Glu Tyr Lys Lys Trp Phe Ser Gly Met Arg Lys
565 570 575

Gly Val Glu Thr Glu Ser Thr Glu Met Ser Arg Ser Thr Thr Gln Thr
580 585 590

Lys Thr Glu Glu Val Gly Lys Ser Ser Glu Ile Phe His Lys Gly Gly
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Thr Ala Ser Ser Ser Ala Glu Ser Thr Lys Gln Pro Gln Pro Gln Val
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<212> DNA

<213> Mus musculus

<400> 3

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 <213> Homo sapiens

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<212> PRT

<213> Homo sapiens

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Asn Asn Cys Arg Asp Ser Thr Leu Cys Pro Ala Tyr Ala Thr Cys Thr
35 40 45

Asn Thr Val Asp Ser Tyr Tyr Cys Thr Cys Lys Gln Gly Phe Leu Ser
50 55 60

Ser Asn Gly Gln Asn His Phe Lys Asp Pro Gly Val Arg Cys Lys Asp
65 70 75 80

Ile Asp Glu Cys Ser Gln Ser Pro Gln Pro Cys Gly Pro Asn Ser Ser
85 90 95

Cys Lys Asn Leu Ser Gly Arg Tyr Lys Cys Ser Cys Leu Asp Gly Phe
100 105 110

Ser Ser Pro Thr Gly Asn Asp Trp Val Pro Gly Lys Pro Gly Asn Phe
115 120 125

Ser Cys Thr Asp Ile Asn Glu Cys Leu Thr Ser Arg Val Cys Pro Glu
130 135 140

His Ser Asp Cys Val Asn Ser Met Gly Ser Tyr Ser Cys Ser Cys Gln
145 150 155 160

Val Gly Phe Ile Ser Arg Asn Ser Thr Cys Glu Asp Val Asn Glu Cys
165 170 175

Ala Asp Pro Arg Ala Cys Pro Glu His Ala Thr Cys Asn Asn Thr Val
180 185 190

Gly Asn Tyr Ser Cys Phe Cys Asn Pro Gly Phe Glu Ser Ser Ser Gly
195 200 205

His Leu Ser Cys Gln Gly Leu Lys Ala Ser Cys Glu Asp Ile Asp Glu
210 215 220

Cys Thr Glu Met Cys Pro Ile Asn Ser Thr Cys Thr Asn Thr Pro Gly
225 230 235 240

Ser Tyr Phe Cys Thr Cys His Pro Gly Phe Ala Pro Ser Ser Gly Gln
245 250 255

Leu Asn Phe Thr Asp Gln Gly Val Glu Cys Arg Asp Ile Asp Glu Cys
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Arg Gln Asp Pro Ser Thr Cys Gly Pro Asn Ser Ile Cys Thr Asn Ala

885

<210> 6
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 <213> Mus musculus

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 Val Asn Glu Cys Gln Asp Thr Thr Thr Cys Pro Ala Tyr Ala Thr Cys
 35 40 45
 Thr Asp Thr Thr Asp Ser Tyr Tyr Cys Thr Cys Lys Arg Gly Phe Leu
 50 55 60
 Ser Ser Asn Gly Gln Thr Asn Phe Gln Gly Pro Gly Val Glu Cys Gln
 65 70 75 80
 Asp Val Asn Glu Cys Leu Gln Ser Asp Ser Pro Cys Gly Pro Asn Ser
 85 90 95
 Val Cys Thr Asn Ile Leu Gly Arg Ala Lys Cys Ser Cys Leu Arg Gly
 100 105 110
 Phe Ser Ser Ser Thr Gly Lys Asp Trp Ile Leu Gly Ser Leu Asp Asn
 115 120 125
 Phe Leu Cys Ala Asp Val Asp Glu Cys Leu Thr Ile Gly Ile Cys Pro
 130 135 140
 Lys Tyr Ser Asn Cys Ser Asn Ser Val Gly Ser Tyr Ser Cys Thr Cys
 145 150 155 160
 Gln Pro Gly Phe Val Leu Asn Gly Ser Ile Cys Glu Asp Glu Asp Glu
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 Cys Val Thr Arg Asp Val Cys Pro Glu His Ala Thr Cys His Asn Thr
 180 185 190
 Leu Gly Ser Tyr Tyr Cys Thr Cys Asn Ser Gly Leu Glu Ser Ser Gly
 195 200 205
 Gly Gly Pro Met Phe Gln Gly Leu Asp Glu Ser Cys Glu Asp Val Asp
 210 215 220
 Glu Cys Ser Arg Asn Ser Thr Leu Cys Gly Pro Thr Phe Ile Cys Ile
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 Asn Thr Leu Gly Ser Tyr Ser Cys Ser Cys Pro Ala Gly Phe Ser Leu
 245 250 255

Val Gly Gly Thr Val Thr Gly Glu Lys Lys Glu Asp Phe Ser Lys Pro
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 Ile Ile Tyr Thr Leu Gln His Ile Gln Pro Lys Gln Lys Ser Glu Arg
 580 585 590
 Pro Ile Cys Val Ser Trp Asn Thr Asp Val Glu Asp Gly Arg Trp Thr
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 Ser Cys Asn Arg Met Ala Asn Leu Ala Ile Ile Met Ala Ser Gly Glu
 625 630 635 640
 Leu Thr Met Glu Phe Ser Leu Tyr Ile Ile Ser His Val Gly Thr Val
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 Arg Ala Val Gln Asn His Asn Thr Tyr Met His Leu His Leu Cys Val
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 Ser Lys Leu Lys Asp Thr Arg Leu Leu Thr Phe Lys Ala Ile Ala Gln
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primers

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<210> 10
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primers

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<210> 11
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<220>
<223> Description of Artificial Sequence: PCR primers

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<400> 12
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<210> 13
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<213> Artificial Sequence

$$x \otimes_{\omega} y = \sum_{i,j,k,l} x_{ij}^k y_{kl}^i e_{jj}^{\otimes k} e_{kk}^{\otimes l} = \sum_{j,k} x_{jj}^k y_{kk}^j e_{jj}^{\otimes k} e_{kk}^{\otimes j} = \sum_j x_{jj}^j y_{jj}^j e_{jj}^{\otimes j} e_{jj}^{\otimes j} = \sum_j x_{jj}^j y_{jj}^j e_{jj}^{\otimes 2j}$$

8 6

34

<213> Artificial Sequence

<223> Description of Artificial Sequence: PCR primers

31

<213> Artificial Sequence

<223> Description of Artificial Sequence: PCR primers

32

<213> Mus musculus

20

<213> Mus musculus

23

<213> Homo sapiens

26

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<213> Homo sapiens

<400> 19
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19

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<400> 25
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18

